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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/645,333 | 08/21/2003 | Atsushi Koide | AK-423XX | 7603 |

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EXAMINER

KESSLER, CHRISTOPHER S

ART UNIT PAPER NUMBER

1742

DATE MAILED: 10/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/645,333

Applicant(s)

KOIDE ET AL.

Examiner

Christopher Kessler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 17 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-8 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Kato et al. in view of Withers et al. and Jin et al.
3. Kato et al. discloses a method for making a metal article comprising:
Forming metal chips from a metal ingot (col. 4, lines 8-10);
Feeding the metal chips into a heated injection machine to pressure form a metal article (col.4, lines 1-9).
Kato et al. further discloses wherein the injection machine melt blends the metal chips (col. 4, lines 22-44).
Kato et al. further discloses that the injection machine is a screw type (see abstract, Fig. 1).
Kato further discloses wherein the metal chips are selected from a group comprising aluminum and aluminum alloys (see col. 3, lines 57-67).
However, Kato et al. does not teach wherein the metal material is a composite including a carbon nano material.
Withers et al. teaches that metal articles may include carbon nano material for the purpose of enhancing hardness and impact resistance (see col. 11, line 35 to col. 12, line 62, Example 49). Withers et al. teaches that the carbon nano material may be in the matrix of metal (see col. 12, lines 30-52).

It would have been obvious to one of ordinary skill in the art to include carbon nano material, as taught by Withers et al., cited above, into the metal of Kato et al. in order to enhance the hardness of the metal, as taught by Withers et al, cited above.

Kato et al. and Withers et al. are silent with regard to the method of forming a composite of metal and carbon nano material.

Jin et al. teaches mixing powdered carbon nano material with metal powder and hot pressing to form an ingot of composite material (see col. 6, line 33 to col. 7, line 58).

It would have been obvious to one of ordinary skill at the time invention was made to form the ingot to be chipped in the invention of Kato et al. in view of Withers et al. by mixing powdered carbon nano material with metal powder and hot pressing, as taught by Jin et al., in order to make a material with excellent hardness and impact resistance as taught by Withers et al., cited above, that was near net shape and substantially defect free, as taught by Kato et al. (see col. 3, lines 3-13).

Response to Arguments

4. Applicant's remarks filed 17 August 2006 have been considered, but they are not persuasive.

5. Applicant argues that Kato et al. does not teach the limitations of claim 1 regarding the steps which applicant has labeled a) b) and c).

The Examiner agrees with this position. However, the examiner never argued that the Kato reference teaches applicant's invention. Rather, the examiner argued that Kato et al. offers teachings that would have made applicant's invention obvious in view of Withers et al. and Jin et al.

Applicant further argues that the teachings of Withers et al. as cited by the Examiner fail to disclose any of the limitations of steps a) through f) of claim 1.

Withers et al. clearly teaches that golf clubs may be made comprising a metal matrix of carbon nanotubes. Withers et al. discloses to make such a composite material via squeeze casting, and does not teach the limitations a) through f) (as labeled by Applicant) of Applicant's invention. However, Withers et al. teaches that certain advantages are gained by forming a composite of metal and carbon nanotubes, in the same field of endeavor as applicant's invention.

Applicant argues that Jin et al. does not teach the limitations of steps d) e) or f) recited in claim 1. Applicant argues that the teachings of Jin et al. are not applicable to be combined with those of Kato et al. because the two references are not in the same technical field.

The Examiner agrees that the Jin reference does not teach the limitations d) e) and f) which use an injection machine. However, the disclosure of Jin, et al. does teach limitations a) and b), as labeled by Applicant. The Examiner disagrees with the argument that the teachings of Jin et al. are not applicable, as the Applicant's disclosure teaches a process for making "metal products of electronic equipment such as heat sinks, shields and bearings, and the like" (page 1, lines 24-29) and also that "it is possible to easily produce a composite metal product having functions of high heat conductivity, excellent electric conductivity, low friction factor, and the like" (page 3, lines 4-7). It is the Examiner's position that a field emitter is a metal product of electronic equipment. Further, Jin et al. teaches that the desired properties in a

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composite field emitter include characteristics of good electrical conductivity and mechanical properties, and heat dissipation (see col. 5, lines 22-34), properties analogous to those taught by Applicant. Applicant is directed to MPEP § 2141.01 (a) to further clarify the Examiner's position that the prior art reference of Jin et al. is applicable.

Applicant argues that none of the references applied in the prior rejection under 35 USC 103 (a) teaches the limitations of step d) of claim 1 in the present application;

(d) melting the metal in the granules and kneading the metal and carbon nano material to form a composite material by using an injection machine.

The Examiner disagrees with this position. Particularly, Kato et al. teaches that the metallic material added to the injection machine is melt-blended (see col. 4, lines 22-44). Kato et al. also teaches that this process produces parts which are substantially free from defects associated with other processes in prior art (see col. 3, lines 3-13). Melting and kneading is interpreted by the examiner to be substantially the same process as melt blending described in Kato et al. If the metal ingot of Jin et al. were used to form the granules, the melting and kneading would take place in the composite material, yielding a process that would have been obvious to one of ordinary skill in the art at the time invention was made.

Applicant argues that the rejection based on the non-statutory obviousness type double patenting are not valid because the combination of the references cited do not teach forming a sheet-shaped material that is subsequently formed into granules.

This argument has been rendered moot, as applicant has filed a terminal disclaimer to overcome the non-statutory obviousness type double patenting rejection of the prior Office Action. The non-statutory obviousness type double patenting rejection is withdrawn.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Kessler whose telephone number is (571) 272-6510. The examiner can normally be reached on Mon-Fri, 9-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

csk

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